

## On the distinction between two tests as measures of the same construct and as interchangeable.

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### **Abstract:**

Comments on the debate between E. R. Harcum (see record 1989-31713-001) and W. Branch (see record 1990-13759-001) regarding the assumption that 2 tests measure the same construct because they correlate moderately highly with each other. Although 2 highly correlated measures do assess the same underlying construct, they may not be interchangeable due to their respective psychometric properties.

**Keywords:** psychology | academic research | statistical correlations | test interpretation | statistical significance

### **Article:**

Walter Branch (February 1990) criticized as inappropriate the practice of assuming two tests measure the same construct simply because they correlate moderately highly with each other. A high correlation, he stated, does not ensure that the two tests are interchangeable, as the tests may have differences on other indices, such as obtained scores, means, and standard deviations. Branch raised an important point for users of educational and psychological tests, but he failed to consider the distinction between (a) two tests that measure the same or a similar construct, and (b) two tests that are parallel (alternate) forms of each other.

Constructs (e.g., depression, self-esteem) are abstractions that are not amenable to direct observation; as a result, test (e.g., Beck Depression Inventory, Rosenberg Self-Esteem Inventory) are developed to operationally measure underlying constructs (Murphy & Davidshofer, 1988). According to Cronbach and Meehl (1955), a test has construct validity when its “nomological network” supports the conclusion that it measures the construct it purports to assess. For a test to have construct validity, it should correlate highly with tests measuring theoretically similar constructs (convergent validity) and should not correlate with tests measuring theoretically unrelated constructs (divergent validity).

With this conception in mind, a high correlation ( $r = .80$ , in Branch's, 1990, example) between two measures does indicate that they are assessing similar constructs. When one considers tests to be operational measures of underlying constructs, two tests that are highly intercorrelated must be measuring similar constructs. However, as Branch noted, a high correlation between two measures does not ensure that the two tests are parallel or alternate forms of each other. For two measures to be interchangeable, they must have similar psychometric properties (e.g., obtained scores, means, standard deviations, and relations to other measures; Murphy & Davidshofer, 1988). Measuring similar constructs is a necessary, but not sufficient, condition for two tests to be parallel forms of each other.

Two highly correlated measures do assess the same underlying construct, although, in practical usage, they may not be directly interchangeable. For example, the Beck Depression Inventory and Hamilton Depression Rating Scale are inter-correlated measures that, given their relations with other measures of depression, suggest that they both assess the construct of depression. However, the two instruments are not parallel and raw scores are not comparable across measures. In interpreting scores from these tests, one must take into account the psychometric properties of the particular instrument, such as norms, standard error of measurement, reliability, and validity.

## REFERENCES

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